03/31/03

TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No. PO9-99-067

In Re Application Of: **Chang et al.**

Serial No.	Filing Date	Examiner	Group Art Unit
09/411,515	October 4, 1999	Adnan M. Mirza	2141

Invention: **RECONFIGURING A NETWORK BY UTILIZING A PREDETERMINED LENGTH QUIESCENT STATE**

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on **February 6, 2003**

The fee for filing this Appeal Brief is: **$320.00**

☐ A check in the amount of the fee is enclosed.

☐ The Commissioner has already been authorized to charge fees in this application to a Deposit Account. A duplicate copy of this sheet is enclosed.

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A duplicate copy of this sheet is enclosed.

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Dated: **March 10, 2003**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellants: Chang et al. : Group Art Unit: 2141

Serial No.: 09/411,515 : Examiner: Adnan M. Mirza

Filed: October 4, 1999 : Appeal No.:

For: RECONFIGURING A NETWORK BY UTILIZING A PREDETERMINED LENGTH QUIESCENT STATE

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Board of Patent Appeals and Interferences
Assistant Commissioner for Patents
Washington, D.C. 20231

Brief of Appellants

Dear Sir:

This is an appeal from a final rejection, dated October 8, 2002, rejecting claims 1-52, all the claims being considered in the above-identified application. This Brief is accompanied by a transmittal letter authorizing the charging of appellants' deposit account for payment of the requisite fee set forth in 37 C.F.R. §1.17(c).

Real Party In Interest

This application is assigned to **International Business Machines Corporation** by virtue of an assignment executed on October 1, 1999 and October 4, 1999 by the co-inventors and recorded with the United States Patent and Trademark Office at reel 010295, frame 0848, on October 4, 1999. Therefore, the real party in interest is **International Business Machines Corporation**.

Related Appeals and Interferences

To the knowledge of the appellants, appellants' undersigned legal representative, and the assignee, there are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the instant appeal.

Status of Claims

This patent application was filed on October 4, 1999 with the United States Patent and Trademark Office. As filed, the application included fifty-two (52) claims, of which four (4) were independent claims (i.e., claims 1, 18, 35 & 36).

In an initial Office Action dated April 23, 2002, claims 1, 5, 8, 10-13, 15, 18, 22, 25, 27-30, 32, 40, 43, 45-48 & 50 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde et al. (U.S. Patent No. 4,503,535; hereinafter, "Budde") in view of Fischer et al. (U.S. Patent No. 5,001,472; hereinafter, "Fischer"); claims 2, 3, 7, 19, 20, 24, 35-38 & 42 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde in view of Fischer as applied to claim 1, and further in view of Brown et al. (U.S. Patent No. 4,860,284; hereinafter, "Brown"); and claims 4, 6, 9, 14, 16, 17, 21, 23, 26, 31, 34, 35, 39, 41, 44, 49, 51 & 52 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde in view of Fischer, Brown, and further in view of Moiin et al. (U.S. Patent No. 6,192,483; hereinafter, "Moiin"). In appellants' response dated July 23, 2002, no claims were amended.

In a second and final Office Action dated October 8, 2002, claims 1, 5, 8, 10-13, 15, 18, 22, 25, 27-30, 32, 40, 43, 45-48 & 50 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde in view of Fischer; claims 2, 3, 7, 19, 20, 24, 35-38 & 42 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde in view of Fischer as applied to claim 1, and further in view of Brown; and claims 4, 6, 9, 14, 16, 17, 21, 23, 26, 31, 34, 35, 39, 41, 44, 49, 51 & 52 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde in view of Fischer, Brown, and further in view of Moiin. In appellants' response dated December 20, 2002, no claims were amended.

Appellants received an Advisory Action dated January 13, 2003, which indicated that appellants' Response to the final Office Action did not place the application in condition for allowance.

A Notice of Appeal to the Board of Patent Appeals and Interferences was filed on January 30, 2003. The status of the claims is therefore as follows:

Claims allowed – none;
Claims objected to – none;
Claims rejected – 1-52; and
Claims canceled – none.

Appellants are appealing the rejection of claims 1-52.

Status of Amendments

Appellants' remarks proffered in the Response to the final Office Action dated October 8, 2002 were entered upon filing of the Notice of Appeal and this Appeal Brief. However, no claim amendment was effectuated by the Response. The claims as set out in Appendix A include all prior entered amendments.

Summary of the Invention

Appellants' invention is directed to a technique for reconfiguring a network having a plurality of nodes 101, 102, 103 & 104 (FIG. 1) to reflect a change in topology of the network (FIGs. 4a-4g and FIG. 5). The technique includes, upon receiving a reconfiguration request 1010 (FIG. 10) at one node of the plurality of nodes, entering a quiescent state 1025 (FIG. 10) at the one node, wherein the one node remains in the quiescent state for a predetermined period of time sufficient to allow at least one other node of the plurality of nodes to also enter a quiescent state (specification, page 15, lines 18-23); and upon termination of the quiescent state 1035 (FIG. 10) at the one node, reconfiguring the one node to reflect the change in topology of the network 1040 (FIG. 10) without checking with the at least one other node (see specification, page 19, lines 15-17).

In one particular aspect, the predetermined period of time includes an amount of time sufficient to transmit a reconfiguration request 915 (FIG. 9) from one node to at least one other node. The receipt of this reconfiguration request causes the at least one other node to enter a quiescent state (see specification, page 15, lines 14-23). In another aspect, the predetermined period of time includes an amount of time sufficient for protocols currently running on the network to complete execution (see specification, page 15, lines 12-14). In still another aspect, the protocols include heartbeat, join, death and node reachability protocols (specification, page 10, lines 12-14; page 10, lines 23-24; page 12, lines 19-22; and page 13, lines 4-6; see also FIGs. 3, 4a-4g, 5, 6a-6b, generally). In a further aspect, the invention includes preventing, by the node in the quiescent state, execution of new protocols by ignoring proclaim, join, node connectivity and group connectivity messages, and by no longer monitoring heartbeat messages 1030 (FIG. 10; see specification, page 17, lines 1-6). In a still further aspect, the invention includes transmitting, by the node when in the quiescent state, proclaim, heartbeat, node connectivity, and group connectivity messages with a reconfiguration sequence identifier to propagate reconfiguration requests to the at least one other node 1030 (FIG. 10; see specification, page 16, lines 13-19; page 17, lines 12-14).

Issues

1. Whether claims 1, 5, 8, 10-13, 15, 18, 22, 25, 27-30, 32, 40, 43, 45-48 & 50 were rendered obvious under 35 U.S.C. 103(a) by Budde in view of Fischer.

2. Whether claims 2, 3, 7, 19, 20, 24, 35-38 & 42 were rendered obvious under 35 U.S.C. 103(a) by Budde in view of Fischer as applied to claim 1, and further in view of Brown.

3. Whether claims 4, 6, 9, 14, 16, 17, 21, 23, 26, 31, 34, 35, 39, 41, 44, 49, 51 & 52 were rendered obvious under 35 U.S.C. 103(a) by Budde in view of Fischer, Brown, and further in view of Moiin.

Grouping of Claims

Since each ground of rejection provides a group of claims, the following groups of claims are included herein:

I. Claims 1, 5, 8, 10-13, 15, 18, 22, 25, 27-30, 32, 40, 43, 45-48 & 50;
II. Claims 2, 3, 7, 19, 20, 24, 35-38 & 42; and
III. Claims 4, 6, 9, 14, 16, 17, 21, 23, 26, 31, 34, 35, 39, 41, 44, 49, 51 & 52

As understood, the claims of one group of claims do not stand or fall with any other groups of claims. Rather, each group of claims is decided independently of the other groups of claims.

Additionally, appellants respectfully submit that claims of Group I do not stand or fall together. For example, claims 5, 8, 13, 22, 25, 30, 40, 43 & 48 each include additional features that provide separate bases of patentability.

Further, appellants submit that Group III claims do not stand or fall together. For example, claims 16, 17, 33, 34, 51 & 52 include additional features that provide a separate basis of patentability.

Argument

Group I: Claims 1, 5, 8, 10-13, 15, 18, 22, 25, 27-30, 32, 40, 43, 45-48 & 50

As noted, claims 1, 5, 8, 10-13, 15, 18, 22, 25, 27-30, 32, 40, 43, 45-48 & 50 stand rejected as obvious over Budde in view of Fischer. Reversal of this rejection is respectfully requested.

Appellants' invention is directed to reconfiguring a network to reflect a change in the topology of the network by utilizing a predetermined length quiescent state. This quiescent state is entered by a node, upon receiving a reconfiguration request at the node. The node stays in the quiescent state for a period of time sufficient to allow at least one other node to also enter a quiescent state. Upon termination of the quiescent state of the node, the node is reconfigured to reflect a change in topology of the network without checking with the at least one other node. Since Budde and Fischer do not teach or suggest the above-noted features, either alone or in combination, appellants respectfully request reversal of this obviousness rejection.

Initially, appellants note that both Budde and Fischer fail to disclose reconfiguring a node upon termination of a quiescent state, which is claimed in the present invention (e.g., claim 1). This deficiency is expressly admitted in the final Office Action at page 5, lines 3-4. Since neither Budde nor Fischer describe this aspect of the present invention, appellants respectfully submit that the combination of Budde and Fischer does not render appellants' independent claims obvious.

Appellants believe that the admission cited above at least renders incomplete the rejection based on the Budde-Fischer combination and raises doubts concerning the necessity for further

argument regarding this combination. However, appellants provide additional remarks relative to Budde and Fischer as set forth below.

Budde discloses a technique for detection, reporting and recovery from errors in a multiprocessing system. Prior to error recovery in Budde, an error-reporting cycle is performed during which all nodes receive an error report (see column 14, lines 8-11). The error-reporting cycle ends with all nodes synchronized, "entering recovery in lock step" (column 14, line 63). After all the nodes receive the error reports, the system enters a timeout delay period, during which the system is quiescent. The timeout period allows transient noise to subside (column 13, lines 36-41; column 14, lines 8-17). Although Budde teaches a quiescent period, it does not teach or suggest a node remaining in a quiescent state for a sufficient period of time to allow at least one other node to enter the quiescent state, as claimed by appellants (e.g., claim 1). Since all nodes in Budde reach the quiescent state in unison, there is no reason to have a node stay in a quiescent state for a period of time sufficient to allow the other nodes to enter a quiescent state. Thus, Budde fails to teach or suggest this aspect of appellants' invention.

In the final Office Action, the Examiner responded to appellants' argument that Budde does not teach or suggest a node staying in a quiescent state for a period of time sufficient to allow at least one other node to enter a quiescent state by stating that "quiescent state is a very broad word" and that "waiting period" in Budde can be interpreted as "quiescent state." The Examiner also provided a dictionary definition of "quiescent." Appellants respectfully submit that the argument stated above does not depend on whether Budde describes a period of time in which a system is quiescent. Nor does the argument depend upon the definition or breadth of the term "quiescent state." Instead, the argument emphasizes a claimed feature of the predetermined time period of the quiescent state, i.e., its sufficiency for allowing at least one other node to enter a quiescent state. Again, this functional aspect of appellants' invention is not described or suggested by Budde.

Further, Budde fails to teach or suggest appellants' claimed element of upon termination of the quiescent state, reconfiguring the node to reflect the change in topology of the network without checking with the at least one other node (e.g., claim 1). Appellants note that it is

explicitly admitted in paragraph 2 of the final Office Action that Budde fails to disclose this element.

For the above reasons, appellants respectfully submit that Budde fails to teach or suggest multiple aspects of appellants' claimed invention.

Fischer fails to overcome the deficiencies of Budde as applied against appellants' claimed invention. Fischer is directed to a token distribution technique that does not require an even distribution of tokens. In Fischer, reconfiguration occurs when a resource interface module (RIM) fails to sense activity for a predetermined time on a node to which a token has been passed. Thus, when inactivity is sensed, reconfiguration is performed (column 11, lines 13-25 thereof). This is very different from appellants' claimed invention. In appellants' claimed invention, the quiescent state is utilized as part of the reconfiguration that reflects the change in topology of the network. For example, one node remains in the quiescent state for a period of time sufficient to allow at least one other node to also enter a quiescent state, and upon termination of the quiescent state at the one node, the one node is reconfigured without checking with the at least one other node (e.g., claim 1). These functional aspects of the quiescent state recited by the present invention are not shared by the inactive state disclosed in Fischer. Instead, Fischer's sensing of inactivity is used as an indicator of node failure (see column 11, lines 20-25 and column 8, lines 64-68).

The operational state of the nodes provides a further distinction between the inactivity of Fischer and the quiescent state in appellants' claimed invention. An inactive node in Fischer is one that is not functioning (see column 8, lines 64-66). In contrast, a node that is in a quiescent state, as claimed by appellants, is a functioning node that is, for instance, waiting for activity in other portions of the system to terminate (see, e.g., claim 1; see also 1035, FIG. 10).

Although there is discussion of inactivity in Fischer, there is no discussion, teaching or suggestion in Fischer of utilizing a quiescent state as part of reconfiguring a network. That is, Fischer is silent as to a quiescent state used in reconfiguring. For instance, Fischer fails to teach or suggest appellants' claimed element of upon receiving a reconfiguration request at one node

of a plurality of nodes, entering a quiescent state at the one node. Instead, in Fischer, reconfiguration is performed when the RIM has not received a token for a predetermined time period (column 11, lines 13-15). That is, in Fischer, first inactivity is detected, then reconfiguration action is taken, as opposed to the node receiving a reconfiguration request and then going into a quiescent state.

Further, there is no discussion, teaching or suggestion in Fischer (nor in Budde) of a node remaining in the quiescent state for a predetermined period of time sufficient to allow at least one other node of the plurality of nodes to also enter a quiescent state (e.g., claim 1). This aspect of the claimed invention is simply missing from Fischer (and Budde).

Yet further, there is no discussion, teaching or suggestion in Fischer of reconfiguring a node to reflect the change in topology, upon termination of the quiescent state (e.g., claim 1). In Fischer, reconfiguring is performed upon detection of inactivity (see column 11, lines 13-15), not upon termination of a quiescent state, as claimed by appellants' invention.

Moreover, Fischer includes no description or suggestion of reconfiguring a node to reflect a change in topology of the network without checking with at least one other node. Fischer instead explicitly describes reconfiguration as including one node checking with another node to obtain the ID of the next node in the sequence (column 11, lines 1-29).

The final Office Action stated that the timeout period in Fischer can be interpreted as a quiescent state. Again, appellants respectfully submit that various interpretations of quiescent state are not at issue. Appellants instead respectfully submit that certain functional aspects of how the quiescent state is used distinguish it from Fischer's timeout period. For example, the timeout period in Fischer is used to detect a failure, while the quiescent state of the claimed invention is used as part of the reconfiguration process itself.

In summary, appellants respectfully submit that a careful reading of Fischer, and in particular, Column 11, lines 1-29 (cited in the final Office Action), fails to teach or suggest various features of appellants' claimed invention. Again, there is no teaching or suggestion of

entering a quiescent state upon receiving a reconfiguration request at a node, of reconfiguring the node upon termination of the quiescent state, nor of reconfiguring the node without checking with the other nodes, as claimed by appellants.

Since both Fischer and Budde fail to teach or suggest multiple aspects of appellants' claimed invention, appellants respectfully submit that the combination of Budde and Fischer also fails to teach or suggest appellants' claimed invention. Thus, appellants respectfully request an indication of allowability for independent claims 1 & 18. For the same reasons, appellants also request allowability of independent claims 35 & 36.

Moreover, appellants respectfully submit that the dependent claims of Group I are patentable for the same reasons as the independent claims, as well as for their own additional characterizations.

Further, appellants respectfully submit that the claim sub-groups of 5, 22 & 40; 8, 25 & 43; and 13, 30 & 48 each have separate bases of patentability. For example, claim 5 recites, in part, an amount of time sufficient for a network protocol to perform a predetermined number of retries plus a predetermined amount of time between each retry. The final Office Action cited Budde as teaching this aspect of the claimed invention at column 15, lines 50-67. Although Budde does disclose retries, appellants note that Budde reveals no teaching or suggestion of a predetermined number of retries within a predetermined amount of time, as claimed by the present invention. As another example, claim 8 recites, in part, a grace period that includes a predetermined period of time sufficient to allow at least one other node of the plurality of nodes to exit a quiescent state. The final Office Action cited Fischer (column 11, lines 1-29 thereof) as teaching this feature. However, appellants respectfully submit that such a grace period is not mentioned, suggested or implied by Fischer. As a further example, claim 13 recites, in part, transmitting, upon entering the quiescent state, a reconfiguration request from the one node to the at least one other node, wherein receipt of the reconfiguration request causes the at least one other node to enter a quiescent state. Although the Office Action cites column 18, lines 27-35 of Budde as teaching this particular aspect, appellants submit that a careful reading of Budde reveals no teaching or suggestion of such a reconfiguration request transmission.

Group II: Claims 2, 3, 7, 19, 20, 24, 35-38 & 42

As noted, claims 2, 3, 7, 19, 20, 24, 35-38 & 42 stand rejected as being obvious over Budde in view of Fischer, and further in view of Brown. This combination fails to teach or suggest one or more features of appellants' claimed invention. Reversal of the rejection is therefore respectfully requested.

As described in detail above, Budde and Fischer fail to describe, teach or suggest at least appellants' claimed features of one node remaining in the quiescent state for a predetermined time sufficient to allow at least one other node to also enter a quiescent state, and upon termination of the quiescent state at the one node, reconfiguring the one node without checking with the at least one other node.

Brown fails to overcome the deficiencies of Budde and Fischer when applied against appellants' claimed invention. For example, Brown fails to describe or suggest use of a quiescent state in reconfiguring. A careful reading of Brown indicates that reconfiguring takes place after identifying that a token signal was lost (see steps from 3041, FIG. 6 to 3062, FIG. 10 thereof). The loss of the token signal is identified after expiration of a timer (see 3040, FIG. 6). In contrast to appellants' claimed invention, there is no discussion of a quiescent state or of using the quiescent state in reconfiguring (e.g., reconfiguring upon termination of a quiescent state). In the final Office Action, the Examiner stated that Brown uses a time out instead of a quiescent state, and that the word quiescent is very broad and can be interpreted in many ways. Appellants respectfully submit that the functional aspects of how appellants' claimed quiescent state is used differ from Brown's timeout period. For example, appellants' quiescent state is used as part of the reconfiguration process, while Brown's timeout is used to detect when a token has been lost.

Claims 2, 19 & 37 recite the features of the independent claims described above, and further recite that the predetermined period of time includes an amount of time sufficient to transmit a reconfiguration request from the one node to the at least one other node, wherein receipt of the reconfiguration request causes the at least one other node to enter a quiescent state.

The final Office Action cited Brown (FIG. 1, element 18; column 6, lines 65-67; and column 7, lines 1-15) as teaching this aspect of appellants' invention. Appellants respectfully submit that a careful reading of Brown and, in particular, the sections referenced above disclose no predetermined period or quiescent state, let alone use of such a state as claimed by appellants.

Further, in claims 3, 20 & 38, appellants recite that the predetermined time is sufficient for completing execution of currently running protocols on the network. The final Office Action referenced column 11, lines 30-35 of Fischer as teaching this aspect. Appellants submit, however, that this reference to Fischer teaches a predetermined time within which all nodes must receive a token. It does not teach a time period sufficient for completion of protocols currently running on the network, as claimed by appellants.

For at least the above reasons, appellants respectfully request reversal of the obviousness rejection of the claims of Group II.

Group III: Claims 4, 6, 9, 14, 16, 17, 21, 23, 26, 31, 34, 35, 39, 41, 44, 49, 51 & 52

As stated above, claims 4, 6, 9, 14, 16, 17, 21, 23, 26, 31, 34, 35, 39, 41, 44, 49, 51 & 52 were rejected as being obvious over Budde in view of Fischer and Brown, and further in view of Moiin. Appellants respectfully request reversal of this obviousness rejection.

The remarks above describe in detail how Budde, Fischer and Brown fail to teach or suggest, at the very least, appellants' claimed features of one node remaining in its quiescent state for a predetermined time that is sufficient to allow at least one other node to also enter a quiescent state, and upon termination of the quiescent state at the one node, reconfiguring the one node without checking with the at least one other node. Appellants respectfully submit that Moiin also fails to describe or suggest at least these features. Thus, the Group III claims are not rendered obvious by the applied art, for the reasons stated above.

Claims 4, 6, 21, 23, 39 & 41 recite, in part, protocols that include heartbeat, join, death, and node reachability protocols. The heartbeat protocol is used to identify nodes that are operational (or alive) in each network. At predetermined intervals, each node transmits a heartbeat message to a downstream node. When a node's heartbeat message ceases, either beyond a preset number or a predetermined time period, the downstream node recognizes it as a node failure (specification, page 10, lines 12-21). The join protocol includes proclaim and join messages that are used to add one or more nodes to a group of nodes (see FIGs. 4a-4b and specification, page 11, lines 1-11). The node reachability protocol uses node connectivity and group connectivity messages to determine a complete set of reachable (or alive) nodes. This information is disseminated to each of the nodes in the system, and potentially includes communications between nodes that require hops through a sequence of multiple networks (specification, page 13, lines 3-13).

The Office Action cites Moiin as teaching the above-noted protocols at column 8, lines 25-47 thereof. A careful reading of Moiin reveals no teaching or suggestion of join or node reachability protocols, as claimed by the present invention. Moreover, the heartbeat messages presented by Moiin are completely unrelated to the heartbeat protocol of the present application, since the former are not used for detection of operational nodes. See column 8, lines 28-29 of Moiin, which describe heartbeat messages being used to broadcast the sequence number of a node to other nodes.

In addition to the above remarks relative to Group III, appellants respectfully submit that claims 16, 17, 33, 34, 51 & 52 have a separate basis of patentability. In claims 16, 33 & 51, appellants' invention recites preventing, by the node when in the quiescent state, execution of new protocols by ignoring proclaim, join, node connectivity, and group connectivity messages, and by no longer monitoring heartbeat messages. In claims 17, 34 & 52, the present invention recites transmitting, by the node in the quiescent state, proclaim, heartbeat, node connectivity, and group connectivity messages with a reconfiguration sequence identifier to propagate reconfiguration requests to the at least one other node. Proclaim and join messages are the initial messages exchanged between groups of nodes that are to be joined (see FIGs. 4a-4b and specification, page 11, lines 1-11). Node connectivity and group connectivity messages are

included in the node reachability protocol. A node connectivity message is sent from each node in a group to that group's group leader, and indicates the networks to which the sending node is connected (i.e., information regarding all the other groups to which the sending nodes belong). A group connectivity message is transmitted by a group leader to all the members of its group in response to a node connectivity message. The group connectivity message includes aggregate information collected from all the node connectivity messages received from the group members (see FIG. 6a and specification, page 13, lines 14-26).

The Office Action cited Moiin (column 8, lines 25-47 thereof) as teaching the above-noted types of messages. Appellants respectfully submit that a careful reading of Moiin fails to uncover any teaching or suggestion of proclaim, join, node connectivity, and group connectivity messages, or of a quiescent state, as claimed by appellants' invention. Again, the heartbeat messages presented by Moiin are not used for detection of operational nodes and are thus unrelated to those of the present application.

Based on the foregoing, appellants respectfully submit that the combination of Budde, Fischer, Brown and Moiin fail to teach or suggest at least one feature of appellants' claimed invention. Thus, appellants request reversal of the obviousness rejection to the Group III claims.

Conclusion

Appellants respectfully request reversal of each of the rejections set forth in the final Office Action. Appellants submit that their claimed invention would not have been obvious to one of ordinary skill in the art based on Budde, Fischer, Brown and/or Moiin, either alone or in combination.

As one example, appellants respectfully submit that none of the applied references, either alone or in combination, recites entering a quiescent state at one node, wherein the one node remains in the quiescent state for a predetermined period of time sufficient to allow at least one other node to also enter a quiescent state. Nor does the applied art, alone or in combination,

recite reconfiguring the one node, upon termination of the quiescent state at the one node, to reflect the change in topology of the network without checking with the at least one other node.

For all of the above reasons, appellants allege error in rejecting their claims as obvious based on the applied art. Accordingly, reversal of all rejections is respectfully requested.

Respectfully submitted,

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Dated: March 10, 2003

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Appendix A

1. A method of reconfiguring a network having a plurality of nodes to reflect a change in topology of said network, said method comprising:

upon receiving a reconfiguration request at one node of said plurality of nodes, entering a quiescent state at said one node, wherein said one node remains in said quiescent state for a predetermined period of time sufficient to allow at least one other node of said plurality of nodes to also enter a quiescent state; and

upon termination of said quiescent state at said one node, reconfiguring said one node to reflect said change in topology of said network without checking with said at least one other node.

2. The method of claim 1, wherein said predetermined period of time comprises an amount of time sufficient to transmit a reconfiguration request from said one node to said at least one other node, wherein receipt of said reconfiguration request causes said at least one other node to enter a quiescent state.

3. The method of claim 1, wherein said predetermined period of time comprises an amount of time sufficient for protocols currently running on said network to complete execution.

4. The method of claim 3, wherein said protocols comprise one of a heart beat, join, death, or node reachability protocol.

5. The method of claim 1, wherein said predetermined period of time comprises an amount of time sufficient for a protocol currently running on said network to perform a predetermined number of retries plus a predetermined amount of time between each retry, wherein after attempting said predetermined number of retries, said protocol completes execution.

6. The method of claim 5, wherein said protocol comprises one of a heart beat, join, death, or node reachability protocol.

7. The method of claim 1, wherein said reconfiguring said one node occurs without any communication to said node from said at least one other node of said plurality of nodes.

8. The method of claim 1, wherein said reconfiguring said one node comprises refraining from observing said change in topology at said one node during a grace period, wherein said grace period comprises a predetermined period of time sufficient to allow said at least one other node of said plurality of nodes to exit a quiescent state, and upon termination of said grace period, observing said change in topology at said one node.

9. The method of claim 1, wherein said reconfiguration request results from addition or removal of a node or of at least one other network to said network.

10. The method of claim 1, where said reconfiguration request results from a change in address of a node of said network.

11. The method of claim 1, wherein said network is reconfigured without interrupting currently executing protocols.

12. The method of claim 1, wherein said network is reconfigured without a global synchronization protocol.

13. The method of claim 1, further comprising transmitting, upon entering said quiescent state, a reconfiguration request from said one node to said at least one other node, wherein receipt of said reconfiguration request causes said at least one other node to enter a quiescent state.

14. The method of claim 13, wherein said reconfiguration request comprises one of a message having a reconfiguration sequence identifier and a message having a configuration

sequence identifier different from a configuration identifier of said one node.

15. The method of claim 1, wherein said network comprises a plurality of interconnected computing networks together implementing a distributed node and adapter status monitoring system.

16. The method of claim 1, further comprising preventing, by said node when in said quiescent state, execution of new protocols by ignoring proclaim, join, node connectivity, and group connectivity messages and by no longer monitoring heartbeat messages.

17. The method of claim 1, further comprising transmitting, by said node when in said quiescent state, proclaim, heartbeat, node connectivity, and group connectivity messages with a reconfiguration sequence identifier to propagate reconfiguration requests to said at least one other node.

18. A system for reconfiguring a network having a plurality of nodes to reflect a change in topology of said network, said system comprising:

means for entering, upon receiving a reconfiguration request at one node of said plurality of nodes, a quiescent state at said one node, wherein said one node remains in said quiescent state for a predetermined period of time sufficient to allow at least one other node of said plurality of nodes to also enter a quiescent state; and

means for reconfiguring, upon termination of said quiescent state at said one node, said one node to reflect said change in topology of said network without checking with said at least one other node.

19. The system of claim 18, wherein said predetermined period of time comprises an amount of time sufficient to transmit a reconfiguration request from said one node to said at least one other node, wherein receipt of said reconfiguration request causes said at least one other node to enter a quiescent state.

20. The system of claim 18, wherein said predetermined period of time comprises an amount of time sufficient for protocols currently running on said network to complete execution.

21. The system of claim 20, wherein said protocols comprise one of a heart beat, join, death, or node reachability protocol.

22. The system of claim 18, wherein said predetermined period of time comprises an amount of time sufficient for a protocol currently running on said network to perform a predetermined number of retries plus a predetermined amount of time between each retry, wherein after attempting said predetermined number of retries, said protocol completes execution.

23. The system of claim 22, wherein said protocol comprises one of a heart beat, join, death, or node reachability protocol.

24. The system of claim 18, wherein said means for reconfiguring said one node reconfigures without any communication to said node from said at least one other node of said plurality of nodes.

25. The system of claim 18, wherein said means for reconfiguring said one node comprises means for refraining from observing said change in topology at said one node during a grace period, wherein said grace period comprises a predetermined period of time sufficient to allow said at least one other node of said plurality of nodes to exit a quiescent state, and upon termination of said grace period, for observing said change in topology at said one node.

26. The system of claim 18, wherein said reconfiguration request results from addition or removal of a node or of at least one other network to said network.

27. The system of claim 18, where said reconfiguration request results from a change in address of a node of said network.

28. The system of claim 18, wherein said network is reconfigured without interrupting currently executing protocols.

29. The system of claim 18, wherein said network is reconfigured without a global synchronization protocol.

30. The system of claim 18, further comprising means for transmitting, upon entering said quiescent state, a reconfiguration request from said one node to said at least one other node, wherein receipt of said reconfiguration request causes said at least one other node to enter a quiescent state.

31. The system of claim 30, wherein said reconfiguration request comprises one of a message having a reconfiguration sequence identifier or a message having a configuration sequence identifier different from a configuration identifier of said one node.

32. The system of claim 18, wherein said network comprises a plurality of interconnected computing networks together implementing a distributed node and adapter status monitoring system.

33. The system of claim 18, further comprising means for preventing, by said node when in said quiescent state, execution of new protocols by ignoring proclaim, join, node connectivity, and group connectivity messages and by no longer monitoring heartbeat messages.

34. The system of claim 18, further comprising means for transmitting, by said node when in said quiescent state, proclaim, heartbeat, node connectivity, and group connectivity messages with a reconfiguration sequence identifier to propagate reconfiguration requests to said at least one other node.

35. A system for reconfiguring a network having a plurality of nodes to reflect a change in topology of said network, said system comprising:

a computing node capable of entering, upon receiving a reconfiguration request at one node of said plurality of nodes, a quiescent state at said one node, wherein said one node remains in said quiescent state for a predetermined period of time sufficient to allow at least one other node of said plurality of nodes to also enter a quiescent state; said computing node further being capable of reconfiguring, upon termination of said quiescent state at said one node, said one node to reflect said change in topology of said network without checking with said at least one other node.

36. An article of manufacture comprising:

a computer useable medium having computer readable program code means embodied therein for reconfiguring a network having a plurality of nodes to reflect a change in topology of said network, said article of manufacturing comprising:

computer readable program code means for entering, upon receiving a reconfiguration request at one node of said plurality of nodes, a quiescent state at said one node, wherein said one node remains in said quiescent state for a predetermined period of time sufficient to allow at least one other node of said plurality of nodes to also enter a quiescent state; and

computer readable program code means for reconfiguring, upon termination of said quiescent state at said one node, said one node to reflect said change in topology of said network without checking with said at least one other node.

37. The article of manufacturing of claim 36, wherein said predetermined period of time comprises an amount of time sufficient to transmit a reconfiguration request from said one node to said at least one other node, wherein receipt of said reconfiguration request causes said at least one other node to enter a quiescent state.

38. The article of manufacturing of claim 36, wherein said predetermined period of

time comprises an amount of time sufficient for protocols currently running on said network to complete execution.

39. The article of manufacturing of claim 38, wherein said protocols comprise one of a heart beat, join, death, or node reachability protocol.

40. The article of manufacturing of claim 36, wherein said predetermined period of time comprises an amount of time sufficient for a protocol currently running on said network to perform a predetermined number of retries plus a predetermined amount of time between each retry, wherein after attempting said predetermined number of retries, said protocol completes execution.

41. The article of manufacturing of claim 40, wherein said protocol comprises one of a heart beat, join, death, or node reachability protocol.

42. The article of manufacturing of claim 36, wherein said computer readable program code means for reconfiguring said one node reconfigures without any communication to said node from said at least one other node of said plurality of nodes.

43. The article of manufacturing of claim 36, wherein said computer readable program code means for reconfiguring said one node comprises computer readable program code means for refraining from observing said change in topology at said one node during a grace period, wherein said grace period comprises a predetermined period of time sufficient to allow said at least one other node of said plurality of nodes to exit a quiescent state, and upon termination of said grace period, for observing said change in topology at said one node.

44. The article of manufacturing of claim 36, wherein said reconfiguration request results from addition or removal of a node or of at least one other network to said network.

45. The article of manufacturing of claim 36, where said reconfiguration request results from a change in address of a node of said network.

46. The article of manufacturing of claim 36, wherein said network is reconfigured without interrupting currently executing protocols.

47. The article of manufacturing of claim 36, wherein said network is reconfigured without a global synchronization protocol.

48. The article of manufacturing of claim 36, further comprising computer readable program code means for transmitting, upon entering said quiescent state, a reconfiguration request from said one node to said at least one other node, wherein receipt of said reconfiguration request causes said at least one other node to enter a quiescent state.

49. The article of manufacturing of claim 48, wherein said reconfiguration request comprises one of a message having a reconfiguration sequence identifier and a message having a configuration sequence identifier different from a configuration identifier of said one node.

50. The article of manufacturing of claim 36, wherein said network comprises a plurality of interconnected computing networks together implementing a distributed node and adapter status monitoring system.

51. The article of manufacturing of claim 36, further comprising computer readable program code means for preventing, by said node when in said quiescent state, the execution of new protocols by ignoring proclaim, join, node connectivity, and group connectivity messages and by no longer monitoring heartbeat messages.

52. The article of manufacturing of claim 36, further comprising computer readable program code means for transmitting, by said node when in said quiescent state, proclaim, heartbeat, node connectivity, and group connectivity messages with a reconfiguration sequence identifier to propagate reconfiguration requests to said at least one other node.